

CLAIMS

1. An arrangement for data transmission in a mine or the like, the arrangement comprising:

a mine information system consisting of at least a control unit (13) of the mine;

a mining vehicle (1) information system consisting of at least a control unit (12) of the mining vehicle;

at least one supply cable (2) that comprises at least one data transmission cable (16 to 19) and is arranged to transmit data between the information system of the mine and the information system of the mining vehicle, and the first end of the supply cable (2) is connected to the information system of the mine;

a reel (5) arranged in the mining vehicle (1) and having a drum (20) rotatable around its centre axis (21) for storing the supply cable (2) in the mining vehicle (1);

means for connecting the second end of the supply cable (2) to the reel (5) drum (20); and

connecting means for connecting the data transmission cable (16 to 19) in the supply cable (2) from the rotating drum (20) to the information system of the mining vehicle, **characterized** in that

the supply cable (2) has at least a first data transmission cable (16) for transmitting data unidirectionally from the information system of the mine to the information system of the mining vehicle, and a second data transmission cable (17) for unidirectional data transmission from the information system of the mining vehicle to the information system of the mine;

said connection means comprise a first rotating connection element (27) on the first end (20a) of the drum (20), and a second rotating connection element (28) on the second end (20b) of the drum (20);

the rotating connection elements (27, 28) are arranged on the centre axis (21) of the drum;

the rotating connection element (27, 28) comprises a rotor (31) and a stator (32), with the rotor (31) arranged to rotate with the drum (20) around the centre axis (21) and the stator (32) arranged non-rotatable;

the rotor (31) of the first rotating connection element (27) is connected to the first data transmission cable (16) of the supply cable (2), and the stator (32) is connected to the information system of the mining vehicle; and

the rotor (31) of the second rotating connection element (28) is connected to the second data transmission cable (17) of the supply cable (2), and the stator (32) is connected to the information system of the mining vehicle.

2. An arrangement as claimed in claim 1, **characterized** in that

the supply cable (2) comprises more than two one-way data transmission cables (16 to 19), and

only two data transmission cables (16, 17) at a time are connected to transmit information between the information systems.

3. An arrangement as claimed in claim 1 or 2, **characterized** in that

the supply cable (2) comprises at least one electric supply cable (15), and

the drum has power transmission means (26) for establishing an electric connection between the electric supply cable (15) and mining vehicle (1) electric system (7).

4. An arrangement as claimed in any one of the preceding claims, **characterized** in that

the data transmission cables (16 to 19) are optical fibre cables, and

the rotating connection elements (27, 28) are rotating optical fibre connectors.

5. A cable reel for storing a supply cable of a mining vehicle, the reel (5) comprising:

a drum (20) on the outer surface of which a supply cable (2) is wound;

a first end (20a) and a second end (20b) of the drum (20);

a centre axis (21) around which the drum (20) turns; and

connection means for connecting the at least one data transmission cable (16 to 19) in the supply cable (2) to an information system external to the reel (5), **characterized** in that

the supply cable (2) has a first data transmission cable (16) and a second data transmission cable (17);

on the first end (20a) of the drum (20), there is a first rotating connection element (27);

on the second end (20b) of the drum (20), there is a second rotating connection element (28);

the rotating connection elements (27, 28) are arranged on the centre axis (21) of the drum (20);

the rotating connection element (27, 28) comprises a rotor (31) and a stator (32), and the rotor (31) is arranged to rotate with the drum (20) around the centre axis (21) and the stator (32) is arranged non-rotatable;

the rotor (31) of the first rotating connection element (27) is connected to the first data transmission cable (16) of the supply cable (2), and the stator (32) is connected to the information system of the mining vehicle; and

the rotor (31) of the second rotating connection element (28) is connected to the second data transmission cable (17) of the supply cable (2), and the stator (32) is connected to the information system of the mining vehicle.

6. A reel as claimed in claim 5, **characterized** in that
the supply cable (2) comprises at least one electric supply cable (15); and

the drum (20) has power transmission means (26) for establishing an electric connection between the electric supply cable (15) and the electric system (7) of the mining vehicle.

7. A reel as claimed in claim 5 or 6, **characterized** in that
the data transmission cables (16 to 19) are optical fibre cables; and
the rotating connection elements (27, 28) are rotating optical fibre connectors.